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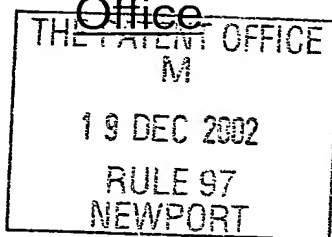
Signed

Dated 2 May 2003

# The Patent Office

1/77

Patents Act 1977  
Rule 16



23DEC02 E772568-1 D00611  
P01/7700 0.00-0229679.6

Request for grant of a patent

The Patent Office  
Concept House  
Cardiff Road  
Newport  
South Wales NP10 8QQ

1.	Your reference	GB920020083GB1		
2.	Patent application number (The Patent Office will fill in this part)	0229679.6		19 DEC 2002
3.	Full name, address and postcode of the or of each applicant (underline all surnames)	INTERNATIONAL BUSINESS MACHINES CORPORATION Armonk New York 10504 United States of America		
	Patents ADP number (if you know it)			
	If the applicant is a corporate body, give the country/state of its incorporation	State of New York United States of America		
4.	Title of the invention	IDENTIFICATION OF A COMPUTING DEVICE		
5.	Name of your agent (if you have one)	D P LITHERLAND		
	"Address for Service" in the United Kingdom to which all correspondence should be sent (including the postcode)	IBM United Kingdom Limited Intellectual Property Department Hursley Park Winchester Hampshire SO21 2JN		
	Patents ADP number (if you know it)			
6.	If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number	Country	Priority App No (if you know it)	Date of filing (day/month/year)
7.	If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date or the earlier application	No of earlier application	Date of filing (day/month/year)	

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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:  
a) any applicant named in part 3 is not an inventor, or  
b) there is an inventor who is not named as an applicant, or  
c) any named applicant is a corporate body.)
- Yes

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description 5 ✓  
Claim(s) 2 ✓  
Abstract 1 ✓ *h*  
Drawing(s) 2 + 2 ✓

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77) 2 ✓

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application

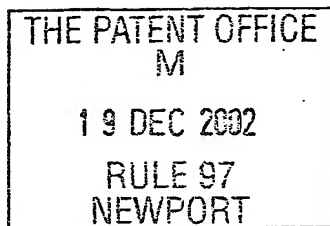
*D P Litherland*

Signature

17 December  
2002  
Date

D P LITHERLAND

12. Name and daytime telephone number of person to contact in the United Kingdom
- N Watson  
01962 818955



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Patent  
Office

7/77

Statement of inventorship and of right to grant of a patent

The Patent Office  
Concept House  
Cardiff Road  
Newport  
South Wales NP10 8QQ

1. Your reference GB920020083GB1
2. Patent application number  
(if you know it) 0229679.6 19 DEC 2002
3. Full name of the or of each applicant INTERNATIONAL BUSINESS MACHINES CORPORATION
4. Title of invention IDENTIFICATION OF A COMPUTING DEVICE
5. State how the applicant(s) derived the right  
from the inventor(s) to be granted a patent By employment and agreement
6. How many, if any, additional Patents Forms  
7/77 are attached to this form?

7. I/We believe that the person(s) named over the page (and  
on any extra copies of this form) is/are the inventor(s) of the  
invention which the above patent application relates to.

D P Litherland

Signature

17 December  
2002  
Date

D P Litherland

8. Name and daytime telephone number of  
person to contact in the United Kingdom N Watson  
Tel: 01962 818955

Enter the full names, addresses and postcodes of the inventors in the boxes and underline the surnames

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Patents ADP number (if known)

08530776001

Patents ADP number (if known)

If there are more than three inventors, please write their names and addresses on the back of another Patents Form 7/77 and attach it to this form

**REMINDER**

Have you signed the form?

Patents ADP number (if known)

IDENTIFICATION OF A COMPUTING DEVICE5        **FIELD OF THE INVENTION**

The invention relates to identifying the location of computer hardware.

10       **BACKGROUND OF THE INVENTION**

15       In a large machine room, row upon row of computer hardware is typically stored - hundreds of machines (e.g. servers) all side by side. Such machines can however all look rather anonymous and trying to locate a particular one for which physical (as opposed to remote) access is required can be difficult.

20       One previous solution was to label each machine with a unique identifier. However in a room full such machines this solution is not always particularly helpful since the labels themselves do not stand out.

25       Another solution was to chart the location of each machine. However such machines are frequently moved around (e.g. to make room for new ones) and such a solution therefore typically requires continual updating of the chart.

Thus there is a need in the industry for a more effective way of locating a computing device.

30       **SUMMARY OF THE INVENTION**

35       Accordingly, in a first aspect, the invention provides a computing device comprising: indicator means; means for receiving a user-initiated request from a remote computing device for activating said indicator means; and means, responsive to said request, for activating said indicator means, thereby enabling a user to identify the computing device from amongst a plurality of computing devices.

40       Note, the user who does the requesting may (or may not) be the same user who identifies the computing device.

In one embodiment, the indicator means comprises at least one light. Any lights may be coloured and they may display a light pattern in response to a request. This pattern may be a flashing pattern (a light may even

flash different colours) Note, if there is only one light, then the light pattern is preferably a flashing pattern.

Other indicator means may also be used which are human perceptible. For example an audible signal (sound), physical projections (e.g. a flag) or even smell may be used to locate the computing device. A combination of indications may be used by a computing device.

In any case, such indicator means preferably aids a user in locating a particular computing device. Thus if there are many computing devices in a room, it is possible to locate one from many. If each computing device in a room has a plurality of lights, it is possible for them to each display or flash different patterns. Thus multiple computing devices can be located simultaneously. Colours may also be used for this purpose.

In one embodiment, the computing device could comprise a pre-programmed indicator means pattern for display in response to the request. In another embodiment such a pattern could be transmitted with the request. This could be a light pattern, sound pattern (series of beeps) etc.

In one embodiment, the indicator means comprises a means for remembering an indicator means light pattern. This is advantageous because the indicator means can continue flashing/emitting a sound etc., even in the event of a software crash. Such remembering means may be a non-volatile memory.

According to another aspect, the invention provides an apparatus for locating a remote computer device, comprising: means operable to receive a user selection for selecting said computing device; means operable to receive a user request for activating indicator means forming part of said computing device, means for requesting activation of the indicator means at the remote computing device, thereby enabling identification of the computing device from amongst a plurality of computing devices.

Note, the user who does the requesting may (or may not) be the same user who identifies the computing device.

In one embodiment, this apparatus is a dedicated control console, whilst in another embodiment this apparatus is a computing device which also comprises the indicator means.

According to another aspect, a method for locating a remote computing device, comprising the steps of: receiving a user selection of said

computing device; receiving a user request for activation of indicator means forming part of said computing device, requesting activation of the indicator means at the remote computing device, thereby enabling identification of the computing device from amongst a plurality of computing devices.

According to another aspect, the invention provides a method for controlling indicator means comprising the step of: responsive to a user-initiated request from a remote computing device activating said indicator means, thereby enabling a user to identify a computing device from amongst a plurality of computing devices.

Parts of the invention is preferably implemented in computer software.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the present invention will now be described, by way of example only, and with reference to the following drawings:

Figure 1 is a component diagram of a preferred embodiment of the present invention;

Figure 2 shows the software running on both a control console and a server to be located, in accordance with one embodiment of the present invention; and

Figure 3 shows the software running on both a control console and a server to be located, in accordance with another embodiment of the present invention.

#### DETAILED DESCRIPTION

With reference to figure 1, a control console 60 is connected via a Local Area Network (LAN) 50 to a room of servers 10 - 40. Each server has at least one additional light 70 fitted to it (preferably in a highly visible place such as the front of the server box).

Figure 2 shows one example of software running on both a control console 60 and a server to be located 10. Console 60 runs remote connection software such as telnet, NetMeeting or VNC. Using this software, it is possible to specify the name of a machine to which a user wishes to connect and thus set up a remote connection between the two machines over which data can be sent. The user of control console 60 can



then access light flashing software 110 running on server 10 via this connection. Dependent upon the software being run at both ends, the user may use either a command prompt or a GUI to control the light flashing software 110. Such software 110 is used to cause a light on, for example, the front of the server 10 to turn on/flash etc..

Figure 3 shows a second example of software running on both the control console 60 and a server to be physically located 10. Control Console 60 comprises a software component 120 via which the server to be located can be selected. Via this software a machine can be selected and a control signal initiator 130 transmits a control signal to the selected machine, server 10. The control signal is received by light flashing software 140 executing on the server. The signal received causes a light, for example, on the front of the server box to turn on or flash.

It will be appreciated that the control console 60 could be a dedicated machine. In an alternative embodiment, any of servers 10 to 40 could be used to locate another of servers 10 to 40.

Once initiated by software, light hardware optionally has a means for remembering a light pattern configuration and would keep displaying this configuration even in the event of a software crash. Such a means could, for example, be a non-volatile memory.

A second command could be used to switch the light off once the server has been located or a time limit could be used (i.e. on expiry of this limit, the light could be switched off).

Note, the user may wish to locate several servers without having to return to the control console. Alternatively, several users may wish to simultaneously locate different machines. Thus each server may be fitted with a panel of lights (e.g. high intensity multicolour LEDs). For example, six lights on each panel would provide 64 unique combinations when considering the binary values of on and off. This matched with different patterns and colours would allow a large number of machines to be easily and separately identified. Users would however preferably have a point of reference from which they could discover particulars of the indicator means for any server they wished to locate (e.g. the light flash pattern). In one embodiment each user has a different light pattern associated with them, such that each user can easily locate servers that they are responsible for.

Note, the use of colours might be particularly important since servers already display light(s) when processing data. A distinct colour

(e.g. blue or red) for the light(s) of the invention could be used to distinguish these lights from the data processing lights (typically yellow or green). Alternatively the lights could be one and the same. In other words no additional hardware is required, with the same lights being used to indicate data processing and to announce the server's presence to a user.

With either the embodiment of figure 2 or 3, each server may be preprogrammed with one or more patterns of lights each in response to a control signal. Alternatively a remote request/the control signal may include the light pattern for server 10 to display.

It will also be appreciated that instead of lights, any human-perceptible indicator means could be used to announce a server to a user. For example, each server could emit a different sound or even smell. Alternatively some servers could flash lights, whilst others emitted sounds/smells. Physical projection (e.g. a flags) could also be used.

Note, the light(s) or other indicator means do not have to form an integral part of the server. Alternatively this could be implemented as a separate piece of hardware connected (e.g. by cable or wiring) to each server. The problem would be that this hardware could become separated from the machine with which it is associated.

It will further be appreciated that the invention is applicable to any computing device (not just servers) with sufficient processing power to invoke light flashing/indicator means software.

Thus it is now far easier to locate computing devices.

CLAIMS

1. A computing device comprising:

indicator means;

means for receiving a user-initiated request from a remote computing device for activating said indicator means; and

means, responsive to said request, for activating said indicator means,

thereby enabling a user to identify the computing device from amongst a plurality of computing devices.

2. The computing device of claim 1, wherein the indicator means comprises at least one light.

3. The computing device of claim 2 or 3, wherein the indicator means comprises means for displaying a light pattern.

4. The computing device of any preceding claim, comprising at least one coloured light.

5. The computing device of any preceding claim comprising a pre-programmed indicator means pattern for display in response to said request.

6. The computing device of any of claims 1 to 4 comprising means for receiving with said request an indicator means pattern to emit.

7. The computing device of claim 1, wherein the indicator means comprises means for emitting an audible signal.

8. The computing device of claim 7, comprising a pre-programmed indicator means pattern to emit in response to said request.

9. The computing device of claim 7 comprising means for receiving with said request an audible signal to emit.

10. The computing device of any preceding claim, wherein the indicator means comprises means for remembering an indicator means pattern.

11. Apparatus for locating a remote computer device, comprising:

means operable to receive a user selection for selecting said computing device;

means operable to receive a user request for activating indicator means forming part of said computing device,

means for requesting activation of the indicator means at the remote computing device,

thereby enabling identification of the computing device from amongst a plurality of computing devices.

12. Method for locating a remote computing device, comprising the steps of:

receiving a user selection of said computing device;

receiving a user request for activation of indicator means forming part of said computing device,

requesting activation of the indicator means at the remote computing device,

thereby enabling identification of the computing device from amongst a plurality of computing devices.

13. Method for controlling indicator means comprising the step of:

responsive to a user-initiated request from a remote computing device, activating said indicator means, thereby enabling a user to identify a computing device from amongst a plurality of computing devices.

14. A computer program comprising program code adapted to perform the method of any of claims 12 or 13.

## ABSTRACT

IDENTIFICATION OF A COMPUTING DEVICE

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The invention relates to a computing device comprising indicator means; means for receiving a user-initiated request from a remote computing device for activating said indicator means; and means, responsive to said request, for activating said indicator means. Such user-initiated activation of the indicator means enables a user to identify the computing device from amongst a plurality of computing devices. The indicator means may be, for example, a plurality of lights which will flash when activated. Alternatively, sound, smell, physical projections etc. may be used.

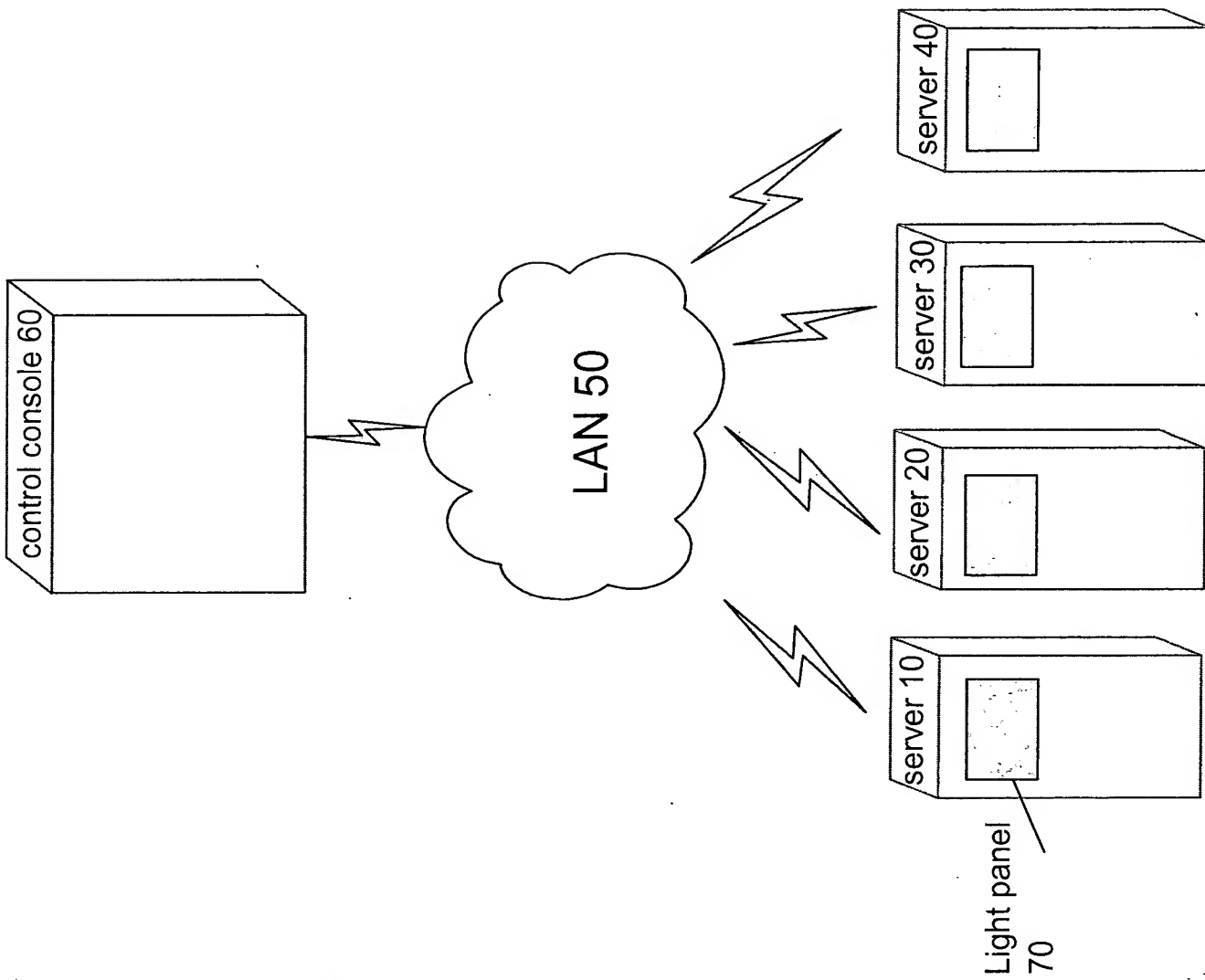


Figure 1

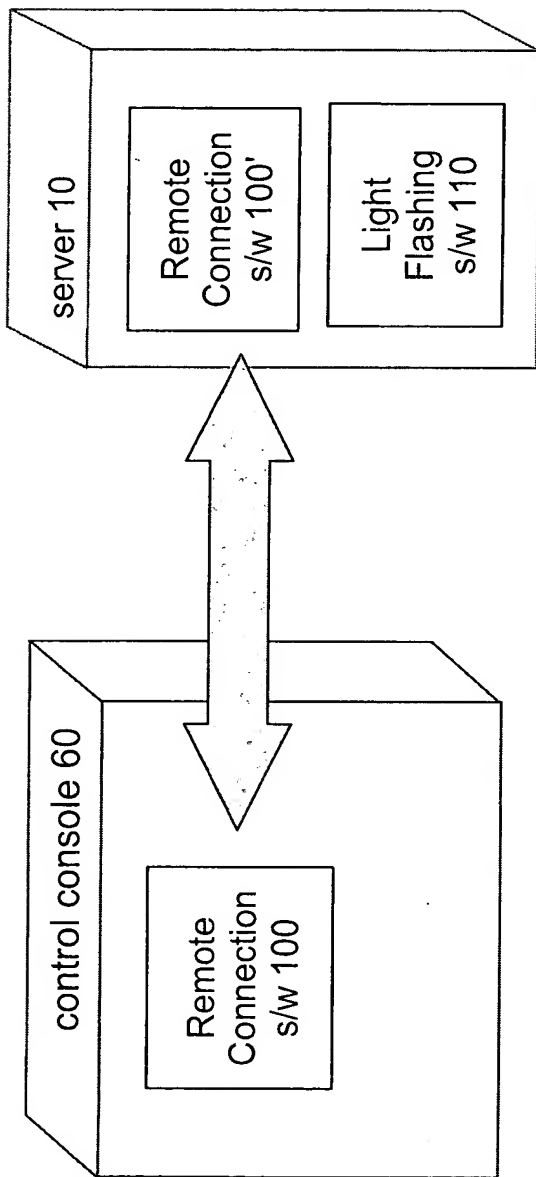


Figure 2

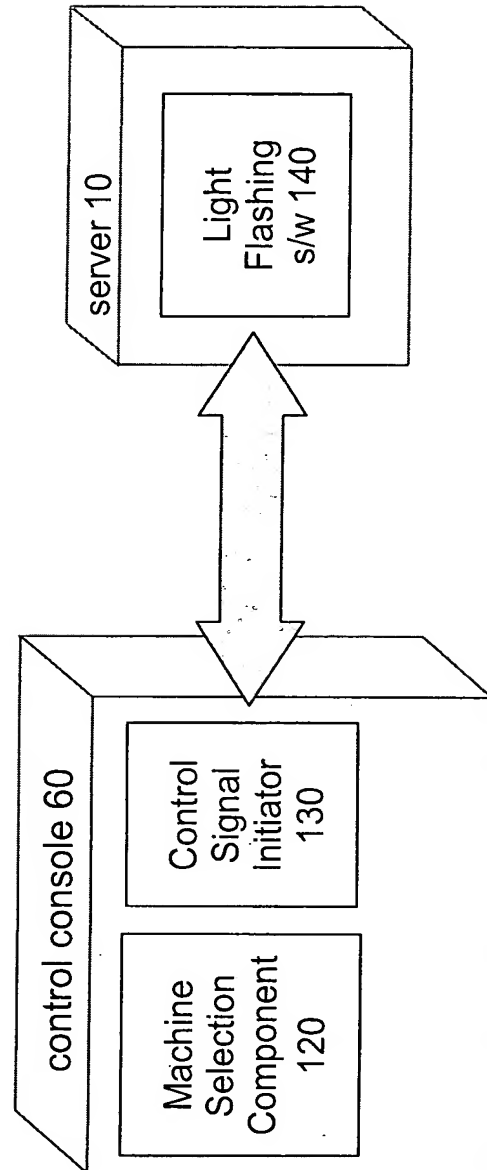


Figure 3